

IMMATURE STAGES OF *EUMYCTERUS* (?) *SACCHARIDIS* BARBER,  
WITH COMMENTS ON THE CLASSIFICATION OF THE  
TRIBE BARINI (COLEOPTERA: CURCULIONIDAE).

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The material from which the following descriptions of the mature larva and the pupa of *Eumycterus* (?) *saccharidis* Barber are made, was collected by Dr. C. H. T. Townsend in Pomalca, near Chiclayo, Peru, June 12, 1926. It consists of three specimens of the larva and one of the pupa, was preserved in alcohol, and sent by Dr. Townsend to the U. S. Bureau of Entomology, together with five imagines for determination and figuring. Mr. H. S. Barber, U. S. Bureau of Entomology, examined the adults, found that they probably represented a new species and has described and named this species in the article immediately preceding (p. 149). Dr. Townsend records that the insect is associated with sugar-cane, the larva attacking the heart of the terminal shoot.

Of the three specimens of the larva one is kept in alcohol in the collection of coleopterous larvae in the U. S. National Museum, and the two others are dissected, mounted on slides and placed in the slides collection of the Museum.

DESCRIPTION OF THE MATURE LARVA.

(U. S. Nat. Mus., one specimen in a vial marked: Pomalca, near Chiclayo, Peru, C. H. T. Townsend, June 12, 1926.)

*General aspect*—(Plate 9, Fig. 1).

The larva is about 5 mm. long, cylindrical and slightly curved. The head is sub-globular, retractible into prothorax. The prothorax is hardly so wide as the mesothorax and metathorax which are of about the same size as the first five abdominal segments. The pedal lobes are distinct but not protuberant, each carrying four small setae. The areas of the body are arranged as usual in weevil larvae. The tergum of the prothorax is entire; the mesothorax and metathorax have two transverse tergal bulges representing the prescutum and the fused scutal and scutellar areas; each of the first seven abdominal segments has three distinct transverse tergal bulges, the middle one, scutum, being considerably smaller than the prescutum and scutellum which are of about equal size. The eighth abdominal segment has two tergal bulges, the scutum being eliminated, probably incorporated in the scutellum. The ninth abdominal segment has a simple entire tergum and the tenth abdominal segment is short and wart-shaped, on each side with two short sulci radiating obliquely up and down from the anus. The hypopleural lobes are simple in all the abdominal segments. An indication of a short and narrow postscutellum is found in the lower part of the tergal areas of most abdominal segments, but there are no ring-shaped intersegmental connecting membranes.

The body is mainly whitish but with a yellowish-brownish head with dark margins and on the dorsal surface with a system of whitish bands which form a large figure somewhat like a reversed letter A (Plate 9, Fig. 2). Very charac-

teristic is also a dark, semicircular line posteriorly on the dorsal side of the epicranium almost parallel with the outline of the head capsule seen from above. The pedal lobes are slightly callous and yellowish; a thinly chitinized, yellowish prothoracic shield covers most of the tergal areas of this segment, and the mouthparts and spiracles are completely or partially chitinized.

The setae are moderately long on the head capsule and the mouthparts, often smaller but distinct on the rest of the body.

The spiracles (Plate 9, Fig. 6) are bifore, small, all of equal size, present on the mesothorax and the first eight abdominal segments and all lateral. The area in which the mesothoracic spiracle is seated is pushed into the posterior part of the prothorax but separated from the anterior margin of the prothorax by a considerable distance. The two air tubes are rather short, each with about five incomplete annuli. Spiracular opening (*o*) circular, atrium (*a*) large and beset with short hairs. The closing apparatus (Fig. 8) near the spiracle proper has one long arm.

*Anatomical details.*—(Plate 9).

Head capsule (Figs. 1 and 2) connected with the rest of the body by a large cervical collar, permitting considerable motion forwards from and backwards into the prothorax.

Epicranial median suture (Fig. 2) somewhat longer than half of the cranium; each of the epicranial ridges parallel with the outline of the head, somewhat more than half as long as the epicranial suture, posteriorly in the middle line extending from a well chitinized, inverted V-shaped thickening of the margin of occiput.

Ocelli (Fig. 5) indistinct, judging from the preserved specimens investigated; only one ocellus present on each side and that reduced to a pigmented spot.

Antenna (Fig. 5) small, two-jointed. Basal joint wide, flat, membranous, dome-shaped and carrying tactile hairs. Apical joint mamillate, somewhat pointed and proximally with a ring-shaped chitinization.

Clypeus about twice as wide as long; without setae.

Labrum (Fig. 2) transverse, anterior margin slightly concave, posterior margin prolonged into a triangular projection and covered by the clypeus; laterally with one well developed seta.

Epipharynx (Fig. 7) on each side with (1) a lateral group of three stout, elongate-ovate, somewhat curved, basically suddenly constricted setae, arranged in a slightly oblique, inwardly and anteriorly directed series; (2) near anterior margin a median, triangularly arranged group of three much smaller, pointed, thick and claw-shaped setae; and (3) immediately behind the lateral group and inside of the anterior end of the epipharyngeal rod two setae, one in front of the other, the anterior broadly ovate, the posterior more elongate, pointed and shaped as ordinary setae.

Mandible (Figs. 3 and 4) strong, subtriangular, with broad basis and heavy condyle; apex simple; facing the buccal cavity with a hollow, gouge-shaped side; dorsal and ventral inner margins thick without teeth or sharp longitudinal crest; on the back with a single small seta.

Maxilla (Fig. 9) having a cardo and a stipes of the shape, proportional size and with the setal armature typical of curculionid larvae. Maxillary lobe or

"mala" large, simple, reaching beyond the end of the maxillary palpus and apically soft skinned, basically slightly chitinized; distally in the soft-skinned part armed with seven setae, of which the three anterior are of the same shape and size as the large lateral epipharyngeal setae, the rest slender and of ordinary type. Maxillary palpus short, two-jointed, with the distal joint of about the same length as the proximal joint but only half as wide; distal joint with one seta, proximal joint without setae but with a few sensory punctures.

Subfacial area (*sf*, Fig. 9) entire; a subdivision into a mental, submental and maxillary articulating area not marked. On each side three well developed setae.

Labium (*l*, Fig. 9) posteriorly limited by an unimpaired, arcuate, anteriorly concave, in the middle spear-like postlabial chitinization (*pl*); one long seta on each side. Ligula thick, broad and short; ventral surface with one small seta and a sensory puncture.

#### COMMENTS ON THE TAXONOMIC POSITION OF THE GENUS *EUMYCTERUS* ACCORDING TO THE LARVA.

According to the characters found in the imago, the genus *Eumycterus* is placed in the tribe Barini and the soundness of this systematic arrangement is substantiated by the results from the examination of the larva. In this all the characters are found by which the larvae of Barini are defined, namely:

(1) Short, bifore spiracles with from four to six incomplete annuli on each air tube.

(2) A dorsal internal epicranial ridge, posteriorly placed, parallel with the outline of the head capsule and usually visible on the outside.

(3) Body sparsely beset with short, fine setae; on each typical abdominal prescutum present in the number of one on each side, or absent, and on scutellum in a transverse single series of two to four.

(4) Anal segment wart-shaped, with centrally placed anus from which four sulci of equal length radiate in an oblique direction, one upward and one downward on each side, limiting one dorsal, one ventral and two lateral anal lobes, all lobes of the same size.

(5) Dorsal side of the cranium with a system of broad whitish bands forming a figure like an inverted letter A (absent in a few genera).

The tribe Barini is listed in Leng's Catalogue of the North American Coleoptera, 1920, between the tribes Laemosaccini and Zytopsini, but the larval type of the tribe Laemosaccini, represented in the U. S. National Museum by many reared larvae of *Laemosaccus* sp., has a general habitus very aberrant from the larvae of Barini, having a large subglobular thorax with swollen pedal lobes and oval ring-shaped spiracles, and therefore can not be considered a close relative of the Barini. On the other hand, the larvae of the genera *Cleonus* and *Lixus* repre-

senting the tribe Cleonini, which is placed in the catalogue right before the Laemosaccini, are so closely related to the Barini that the two tribes can be separated only by minor differences in the setal arrangement on the abdominal scutellum, the maxillary mala and the epipharynx and by the absence in the Cleonini of the posterior epicranial ridge, which is present in the Barini, and all these characters may possibly even prove to be of no tribal value when the larvae of more of the species of both tribes become known.

The lack of generic homogeny in the tribe Zygopsini has been discussed by the author in an earlier paper<sup>1</sup> in which a fundamental difference was pointed out between the larva of *Zygops* and the genera *Cylindrocopturus* and *Eulechriops*, the larva of *Zygops* having oval, ring-shaped spiracles and a tenth abdominal segment with a large, soft, pad-like ventral anal lobe and the larvae of the two other genera having short, bifore spiracles and a tenth abdominal segment with normally developed ventral anal lobe. Therefore it was also suggested that the tribe Zygopsini be reconstructed by removing the genera *Cylindrocopturus* and *Eulechriops* from it and a new tribe created for them, but a name was not given to this new tribe at the same time; for practical purposes it is now proposed to name it here, and I suggest that it be called Cylindrocopturini.

Whereas the larvae of the Barini show little relationship to the larva of *Zygops*, representing the tribe Zygopsini (sensu restricto), they approach rather closely the larvae of the tribe Cylindrocopturini and are separated from them only by minor differences.

Regarding the genera *Laemosaccus* and *Zygops* as misplaced, and therefore to be eliminated from further consideration at present, the rest of the long series of genera which constitute the tribes Cleonini, Barini and Cylindrocopturini seem to be correctly placed in these tribes and the tribes themselves to be properly limited and well defined, except the tribe Barini, which should be divided into two groups of genera, and each group given tribal rank. Following the systematic arrangement in Leng's Catalogue the tribe Barini is composed of two subtribes, namely, the Barides and the Centrinides. In the U. S. National Museum are present the larvae of the following genera of Barides: *Baris*, *Pycnobaris*, *Madarellus*, *Ampelogypter*, *Trichobaris* and *Orthoris*. These larvae are closely related and recognized (1) by having mandibles with one apical tooth and usually two, rarely one or three lateral teeth on the dorsal inner edge, but never more than four teeth altogether, and (2) by lacking a complete, ring-shaped intersegmental region, the postscutellum being short and dorsally vanishing

<sup>1</sup>Böving, A. G.: Immature stages of *Eulechriops gossypii* Barber with comments on the classification of the tribe Zygopsini (Proc. Ent. Soc. Washington, Vol. 28, 1926, p. 54-62).

or entirely absent, and the poststernellum not developed. The subtribe Centridae is represented in the National Museum by the following genera: *Geraeus*, *Limnobaris*, *Eisonyx*, *Zygobaris* and *Barinus*. Of these larvae the three last are very closely related to the larvae of the Barides and possess the same type of mandibles and show the same absence of a distinct intersegmental ring as the larvae of Barides, but the larvae of *Geraeus* (= *Centrinus*) and *Limnobaris*<sup>1</sup> have (1) palmate mandibles with five almost equal teeth and (2) the postscutellum and poststernellum of the abdominal segments forming a broad or very broad ring-shaped intersegmental region. These structures are so strikingly different from the corresponding ones by which all the other larvae of Barini are characterized that it is deemed necessary not only to separate the genera *Geraeus* and *Limnobaris* from the rest of the Barini as a subtribe, but to create a special new tribe for them, and this tribe is here named Centridae. On the other hand, the larvae of *Eisonyx*, *Zygobaris* and *Barinus* are not essentially different from the larvae of the genera included in the subtribe Barides and can not be held together as a separate subtribe, but should be united with the rest of the genera, constituting together with these a simple, not subdivided tribe, the Barini (sensu restricto).

In connection with the above-given taxonomic comments the following two keys have been prepared, one for the separation and characterization of the larvae of the six discussed tribes of Curculioninae and the other for the determination of the larvae of the genera of Barini in the National Museum.

# Key to Tribes.

1. Spiracles annular, oval. (Mandibles subtriangular, apically simple and wedge-shaped, without marginal teeth, gouge-shaped inner face. Anus transverse, surrounded by four lobes of different sizes).....2
- Spiracles bifore; air tubes short with four to six annuli.....3
2. Anal segment with the dorsal and ventral anal lobes thick and lip-shaped the lateral lobes triangular and small. Epipharyngeal rods parallel.....

Laemosaccini  
(*Laemossaccus*)<sup>2</sup>
- Anal segment with a large, soft, pad-like ventral lobe, the upper lobe and the lateral lobes narrow and sausage-shaped. Epipharyngeal rods converging posteriorly and fused near pharynx.....

Zygopsini  
(*Zygops*)

<sup>1</sup>Böving, A. G.: Description and figures in "Ainslie, G. G. The Cornpit weevil, *Centrinus penicellus* Herbst." (Journal of Economic Entomology, Vol. 13, 1920, pp. 277-280—one plate.)

Böving, A. G.: The larva of *Limnobaris recticornis* LeConte. (Journal New York Entomological Society, Vol. 32, 1924, pp. 197-204—one plate.)

<sup>2</sup>In parenthesis are given the names of the genus or genera whose larvae are kept in the National Museum and in the present investigation have been considered as representing the tribe.



3. Either with a low, conical projection of the posterior end of 9th abd. tergum<sup>1</sup>  
or with a large, eye-like, dark colored mark on each side of the head.....  
Cyliandrocopturini  
(*Cyliandrocopturus* and  
*Eulechriops*).....4
- Without such characters.....4
4. Mandible palmate with five digitate teeth. Intersegmental region ring-  
shaped, broad and complete between the abdominal segments.....Centrini  
(*Geraeus* and  
*Limnobaris*)
- Mandible not palmate, with one apical and usually two lateral teeth,  
never more than four teeth in all. Intersegmental region absent or not  
developed as a complete ring.....5
5. Abdominal scutellum on each side with a longitudinal single series of five  
or less setae. Epicranial curved inner ridges usually visible on the out-  
side.....Barini  
(*Baris*, *Pycnobaris*,  
*Madarellus*, *Ampelogypter*,  
*Trichobaris*, *Orthoris*,  
*Eisonyx*, *Zygobaris*,  
*Barinus*, *Eumycterus*)
- Abdominal scutellum on each side usually with a longitudinal series of  
about eight setae, the uppermost arranged in pairs; all carried by small  
round plates, one or two setae on each, or set on top of minute, dome-  
shaped, soft projections. Epicranial curved inner ridge not visible on  
the outside.....Cleonini  
(*Cleonus*, *Lixus*)

Key to Genera of Barini.<sup>2</sup>

1. Mandible triangular; inner face broad and excavated; apex simple, dorso-  
lateral margin thick and entire.....*Eumycterus* (?)  
(*saccharidis* Barber)<sup>3</sup>
- Mandible different; apically with a single strong tooth, dorso-lateral mar-  
gin dentate or otherwise produced.....2
2. Dorso-lateral margin of mandible raised into a low sharp crest with anterior  
and posterior ends projecting into small tooth-like processes.....3
- Dorso-lateral margin of mandible with at least one distinct tooth and no  
well defined crest.....4
3. Epipharyngeal setae long and pointed along the Epipharyngeal free lateral  
margins, but small, thick and ovate between the epipharyngeal rods.....  
*Baris*  
(*monardae* Pierce, *callida*  
Casey) and  
*Pycnobaris*  
(*pruinosa* LeConte)

<sup>1</sup>As in the very similar larva of *Anthonomus eugenii* Cano (the pepper weevil).

<sup>2</sup>The nomenclature applied by Leng in his Catalogue of North American Coleoptera, 1920, is followed in this generic key to the larvae of the tribe Barini.

<sup>3</sup>In parenthesis are given the names of the species whose larvae are kept in the National Museum and in the present investigation have been considered as representing the genus.

- Epipharyngeal setae all of about the same size and rather short, slender and pointed.....*Trichobaris*  
(*trinotata* Say, *mucorea* Leconte,  
*compacta* Casey, *texana* Leconte)
4. Lateral marginal setae of epipharynx strong and considerably longer than the other epipharyngeal setae.....5  
Lateral marginal setae of epipharynx not particularly longer and stronger than the rest.....6
5. Anterior pair of setae between the epipharyngeal rods elongate-ovate.....*Ampelogypter*  
(*ater* Leconte)
- Anterior pair of setae between the epipharyngeal rods strong and hook-shaped.....*Madarellus*  
(*undulatus* Say)
6. Body with minute setae. (Mandible with one well developed lateral tooth and a second much smaller).....*Orthoris*  
(*crotchii* Leconte,  
*cylindrifera* Casey)
- Body with well developed setae.....7
7. Mandible with two distinct lateral teeth and a third very small.....*Zygobaris*  
(*xanthoxyli* Pierce)
- Mandible with one distinct lateral tooth and with or without a minute second one.....8
8. Mandible with regularly curved back; dorso-lateral tooth shorter than the apical tooth.....*Eisonyx*  
(*picipes* Pierce)
- Mandible with a somewhat hump-shaped back; dorso-lateral tooth larger and longer than the apical tooth.....*Barinus*  
(*albescens* Leconte)

#### DESCRIPTION OF PUPA.

(U. S. Nat. Mus., one pupa in vial, together with one mature larva, marked as given above for the larva.)

The pupa (Fig. 2) is about 4 mm. long. The head, the beak not taken into consideration, is comparatively small, round and bent completely below the prothoracic shield whose anterior free margin is seen in whole in the ventral



Fig. 2

view of the pupa. The eye-cases are of moderate size, transverse and as widely separated as the width of the beak. The beak is long, cylindrical and extends to the posterior third of the mesothoracic sternum. The antennae are geniculate and the tip of each reaches to the middle of the mesothoracic sternum at the level with the insertion of the second pair of legs. The prothoracic shield ("pronotum") is large and in dorsal view dome-shaped in outline. Both the elytra and the hind wings go as far back as the fifth abdominal sternite. The prothoracic legs are inserted well apart and close to the posterior margin of the segment. The coxae of all three pairs of legs are of mod-

erate size, subcylindrical and differ little in length and width from each other. The tarsal tip of each prothoracic leg extends to near the posterior

margin of the mesosternum; the tarsal tip of the mesothoracic leg extends to the middle of the metathorax and each metathoracic leg to the middle of the fifth abdominal segment. The abdomen is not fully as long as the anterior remainder of the body and rather broadly oval; the sternites of the third to seventh abdominal segments are about of equal length. The ninth abdominal segment is armed on each side with a somewhat S-shaped, slender and pointed pleural process, about as long as half of the width of the ninth abdominal segment.

The setae are all of moderate length and yellowish brown. They are distributed as follows:

On each side of the head (1) one on vertex near the longitudinal middle line, (2) one laterally above the eye-case, (3) one near the inner margin of the eye-case, (4) one at basis of the beak, (5) one immediately behind, and (6) one immediately in front of the insertion of the antenna.

On each side of the prothoracic tergum are inserted (1) five marginal setae, two of which are more anterior in position, the other three more posterior; (2) one seta in the hind corner; (3) one anterior discal seta near the longitudinal middle line, and (4) one posterior discal seta twice as far to the side from the longitudinal middle line as the anterior discal seta and rather close to the seta in the hind corner.

On each side of the mesothoracic tergum are two setae, the one a little more anterior and somewhat nearer the middle line than the other.

On each side of the metathoracic tergum are two setae, placed farther from the longitudinal middle line than the mesothoracic setae but otherwise in a similar way.

On the abdominal segments are on each side (1) three dorsal setae in a transverse line on each of the first to the eighth abdominal segments and (2) one lateral seta on each pleurum of the first to eighth abdominal segments.

There are no setae on any abdominal sternum.

The femur of each leg has two setae near the distal end.

The spiracles, nine in number, are rather small, circular and latero-dorsally placed on each side of the body.

#### EXPLANATION OF PLATE.

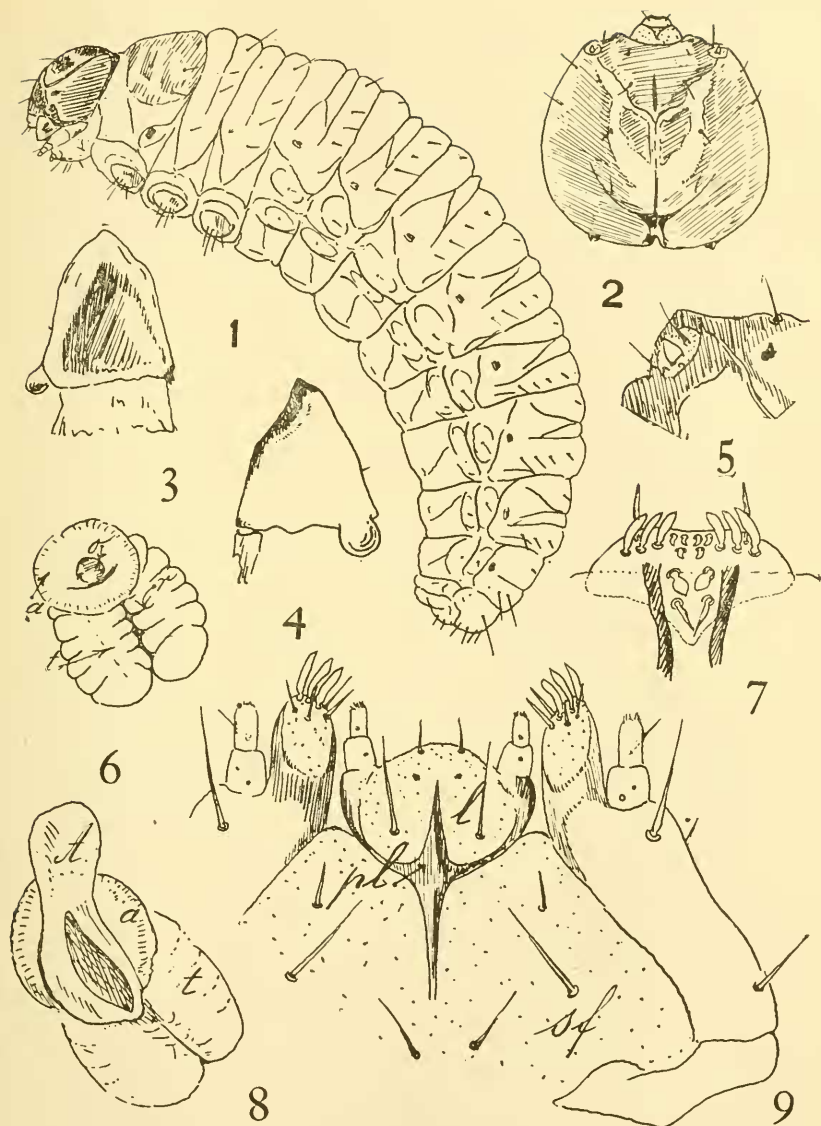
(Drawings by the author.)

1. *Eumycterus* (?) *saccharidis* Barber. Mature larva. Lateral view of the larva.
2. " " " Head, dorsal view.
3. " " " Mandible, buccal view.
4. " " " Mandible, ventral view.
5. " " " Antenna and eye-spot.
6. " " " Spiracle; a, atrium; o, spiracular opening; t, spiracular air tube; r, annulus.
7. " " " Epipharynx.
8. " " " Closing apparatus. Atrium and air tubes in the background: A, arm; a, atrium; t, air tube.
9. " " " Ventral mouthparts: l, labium; pl, postlabial chitination; sf, subfacial region.

Text figure.

*Eumycterus* (?) *saccharidis* Barber. Pupa; ventral view. (Drawing by the author.)





*Eumycteris saccharidis* Barber.